REMARKS

The Official Action mailed October 5, 2004, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time. Accordingly, the Applicants respectfully submit that this response is being timely filed.

The Applicants note with appreciation the consideration of the Information Disclosure Statements filed on October 31, 2000, July 5, 2001, January 30, 2002, February 5, 2002, November 6, 2002, June 23, 2003, October 24, 2003, and December 2, 2003. However, the Applicants have not received acknowledgment of the Information Disclosure Statement filed on August 27, 2004. The Applicants respectfully request that the Examiner provide an initialed copy of the Form PTO-1449 evidencing consideration of the Information Disclosure Statement filed August 27, 2004.

Claims 1, 3 and 62-92 are pending in the present application, of which claims 1, 65, 69, 73, 77, 81, 85 and 89 are independent. Claims 77, 81, 85 and 89 have been amended to correct minor matters of antecedent basis in the claims. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Paragraph 5 of the Official Action rejects claims 1, 3 and 62-68 as obvious based on the combination of U.S. Patent No. 5,728,259 to Suzawa et al., U.S. Patent No. 5,704,986 to Chen et al., U.S. Patent No. 5,306,651 to Masumo et al., and U.S. Patent No. 5,661,056 to Takeuchi. Paragraph 6 of the Official Action rejects claims 69-76 as obvious based on the combination of Suzawa, U.S. Patent No. 5,147,826 to Liu et al. and Chen. Paragraph 7 of the Official Action rejects claims 77-84 as obvious based on the combination of Suzawa, Liu, U.S. Patent No. 5,132,754 to Serikawa et al. and Chen. Paragraph 8 of the Official Action rejects claims 85-92 as obvious based on the combination of Suzawa, Serikawa and Chen. The Applicants respectfully traverse the rejection because the Official Action has not made a *prima facie* case of obviousness.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims. The independent claims recite irradiating a crystallized semiconductor film with laser light, ultraviolet rays or infrared rays followed by a step of removing a metal from the crystallized semiconductor film by gettering. The Official Action notes that Suzawa teaches "irradiating the crystallized semiconductor film with laser light in column 5, line 2" (page 3, Paper No. 0904). Although Suzawa appears to teach that "crystallization by heat annealing may be followed by irradiation with laser light," the irradiating step in Suzawa merely "improves the crystalline properties" of the crystallized semiconductor film (column 5, lines 2-4) and is not followed by a step of removing a metal from the crystallized film by gettering. On the contrary, the present invention discloses an irradiating step for distribution of a metal element such as nickel by "disappearing the block of the nickel element" (for example,

page 14, line 19 to page 15, line 1), and the present invention discloses that the irradiating step is for gettering the metal to the oxide film effectively (for example, page 15, lines 15-16). These functions of the irradiating step of the present invention are not taught or suggested in Suzawa. Specifically, although Suzawa appears to teach an irradiating step, it is not taught or suggested that the irradiating step of Suzawa be followed by a step of removing a metal from a crystallized semiconductor film by gettering.

Indeed, the Official Action concedes that "Suzawa fails to teach ... removing the metal from the crystallized semiconductor film by gettering after the irradiation of the laser light" (page 4, Paper No. 0904) and relies upon Chen to allegedly cure the deficiencies in Suzawa. However, Chen does not cure the deficiencies in Suzawa. Chen is relied upon to allegedly teach "gettering of metal ions from the semiconductor materials for fabricating transistor devices" (Id.). However, it appears that the gettering process in Chen is particularly suited for "cleaning a semiconductor substrate," not for removing metal from a crystallized film. Although Chen appears to teach that a "semiconductor substrate is exposed to the high flow of the second oxidant gas and the flow of the chlorine containing getter material at a temperature not exceeding 800 degrees centigrade for a time period sufficient to remove organic contaminant residues and metal ion contaminant residues from the surface of the semiconductor substrate" (Abstract), Chen is completely silent as to lasers, crystallization or irradiation. Specifically, Chen does not teach or suggest that the cleaning process be performed after irradiating a crystallized semiconductor film with laser light, ultraviolet rays or infrared rays. Therefore, Suzawa and Chen, either alone or in combination, do not teach or suggest irradiating a crystallized semiconductor film with laser light, ultraviolet rays or infrared rays followed by a step of removing a metal from the crystallized semiconductor film by gettering.

Masumo, Takeuchi, Liu and Serikawa also do not cure the deficiencies in Suzawa and Chen. Masumo is relied upon to allegedly teach forming "a single or a

multilayer of silicon oxide and silicon oxide nitride" (page 4, paper No. 0904); Takeuchi is relied upon to allegedly teach "the advantages of multi-layer gate insulating film of oxide and oxide nitride" (Id.); Liu is relied upon to allegedly teach material for promoting crystallization and crystallization in a lateral direction (page 7, Id.); and Serikawa is relied upon to allegedly teach crystallization by infrared irradiation (page 10, Id.). However, Suzawa, Chen, and one or more of Masumo, Takeuchi, Liu and Serikawa, either alone or in combination, do not teach or suggest irradiating a crystallized semiconductor film with laser light, ultraviolet rays or infrared rays followed by a step of removing a metal from the crystallized semiconductor film by gettering. Since the prior art does not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained.

Furthermore, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Suzawa, Chen, and one or more of Masumo, Takeuchi, Liu and Serikawa or to combine reference teachings to achieve the claimed invention. MPEP § 2142 states that the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. It is respectfully submitted that the Official Action has failed to carry this burden. While the Official Action relies on various teachings of the cited prior art to disclose aspects of the claimed invention and asserts that these aspects could be used together, it is submitted that the Official Action does not adequately set forth why one of skill in the art would combine the references to achieve the features of the present invention.

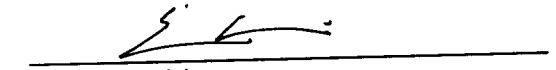
For example, there is no showing in Suzawa that teaches or suggests that removing a metal from a crystallized semiconductor film is of any concern, or that these concerns could or should be solved by incorporating a gettering process, such as that disclosed in Chen, after the irradiation process, particularly when Chen is concerned with cleaning a substrate and not for removing metal from a crystallized film. Similarly, there is no showing in Chen that teach or suggests that "metal ion contaminant

residues" are a problem after irradiating a crystallized semiconductor film with laser light, ultraviolet rays or infrared rays, or that these concerns could or should be applied to an irradiation process such as that disclosed in Suzawa. Masumo, Takeuchi, Liu and Serikawa do not cure the deficiencies in the motivation to combine Suzawa and Chen. Masumo, Takeuchi, Liu and Serikawa do not teach or suggest that it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the substrate cleaning method of Chen after the irradiation/crystallization step of Suzawa. Therefore, the Applicants respectfully submit that there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the prior art to achieve the claimed invention.

In the present application, it is respectfully submitted that the prior art of record, either alone or in combination, does not expressly or impliedly suggest the claimed invention and the Official Action has not presented a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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